

What is claimed is:

1. A monoclonal antibody BR96 produced by hybridoma ATCC HB10036, or fragments thereof, and functional equivalents thereof having an antigen-binding region that competitively inhibits the immunospecific binding of monoclonal antibody BR96, having specific immunological reactivity with human carcinoma cells, said antibody characterized by being capable of internalizing within the carcinoma cells with which it reacts, mediating antibody-dependent cellular cytotoxicity and complement-dependent cytotoxicity activity, and/or killing of said human carcinoma cells in the absence of host effector cells or complement.
2. Hybridoma HB 10036 as deposited with the ATCC.
3. An Fab, F(ab')₂, or Fv fragment of the antibody of claim 1.
4. An immunoconjugate comprising a molecule containing the antigen-binding region of the BR96 monoclonal antibody joined to a cytotoxic agent.
5. The immunoconjugate of claim 4, wherein the molecule comprises BR96 monoclonal antibody or fragments thereof.
6. The immunoconjugate of claim 4, wherein the molecule comprises chimeric human/murine BR96 antibody or fragments thereof.
7. The immunoconjugate of claim 5, wherein the fragments are selected from the group consisting of Fv, F(ab') and F(ab')₂ fragments.
8. The immunoconjugate of claim 6, wherein the fragments are selected from the group consisting of Fv, F(ab)' and F(ab')₂ fragments.

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9. A method for selectively killing tumor cells expressing the antigen that immunospecifically binds to BR96 monoclonal antibody comprising reacting the immunoconjugate of claim 4 with said tumor cells.
 10. A recombinant single-chain immunotoxin molecule comprising a cloned heavy chain Fv portion and a cloned light chain Fv portion of the BR96 monoclonal antibody joined to a cytotoxic agent.
 11. A bispecific antibody with a binding specificity for two different antigens, one of the antigens being that with which the monoclonal antibody of claim 1 binds.
 12. The bispecific antibody of claim 11, wherein one of the antigens comprises a variant of Le^y determinant which includes an epitopic site containing fucose α1-3.
 13. A monoclonal antibody, the antigen-binding region of which competitively inhibits the immunospecific binding of monoclonal antibody BR96 produced by hybridoma HB 10036 to its target antigen.
 14. The antibody of claim 13, wherein said antigen comprises a variant of Le^y determinant which includes an epitopic site containing fucose α1-3.
 15. A human/murine recombinant antibody, the antigen-binding region of which competitively inhibits the immunospecific binding of monoclonal antibody BR96 produced by hybridoma HB 10036 to its target antigen.
 16. The antibody of claim 1, wherein the antibody is conjugated to a therapeutic agent to form an antibody conjugate.

17. The antibody of claim 16, wherein the therapeutic agent is an anti-tumor drug, a cytotoxin, a radioactive agent, a second antibody or an enzyme.

5 18. The antibody of claim 17, wherein the cytotoxin is a ribosome binding toxin.

19. The antibody of claim 18, wherein the ribosome binding toxin is ricin A.

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20. A composition comprising a combination of an immunoconjugate comprising the antibody of claim 1 linked to an enzyme capable of converting a prodrug into a cytotoxic drug, and said prodrug.

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21. A pharmaceutical composition useful in the treatment of carcinomas comprising a pharmaceutically effective amount of the antibody of claim 1 and an acceptable carrier.

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22. A pharmaceutical composition useful in the treatment of carcinomas comprising a pharmaceutically effective amount of at least one antibody conjugate according to claim 16 and an acceptable carrier.

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23. A method of treating carcinomas in vivo comprising administering to a patient a pharmaceutically effective amount of a composition containing the antibody of claim 1.

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24. A method for determining the presence of carcinoma in human tissue comprising contacting a specimen of said tissue with the antibody of claim 1 and detecting the binding of said antibody to said tissue.

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25. The method of claim 24, wherein said antibody is labeled so as to directly or indirectly produce a detectable signal with a compound selected from the group consisting

of a radiolabel, an enzyme, a chromophore and a fluorescer.

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26. A method for imaging carcinoma comprising administering to a patient intravenously the antibody of claim 1 in an amount effective for detection of the carcinoma, allowing the antibody to bind to carcinoma cells and to localize to the site of carcinoma cells and detecting said antibody bound to the carcinoma cells.
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27. The method of claim 26, wherein said antibody is labeled so as to directly or indirectly produce a detectable signal with a label selected from the group consisting of a radiolabel, an enzyme, a chromophore, and a fluorescer.
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28. A monoclonal anti-idiotypic antibody reactive with an idiotope on the antibody of claim 1.
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29. A diagnostic kit comprising:
- a) the antibody of claim 1; and
 - b) a conjugate of a detectable label and a specific binding partner of the antibody of (a) above.
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30. The diagnostic kit of claim 29, wherein the label is selected from the group consisting of enzymes, radiolabels, chromophores and fluorescers.
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31. The immunoconjugate of claim 4, wherein the cytotoxic agent is selected from a group consisting of antimetabolites, alkylating agents, anthracyclines, antibiotics, anti-mitotic agents, and chemotherapeutic agents.
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32. The immunoconjugate of claim 4, wherein the cytotoxic agent is selected from a group consisting of ricin, doxorubicin, daunorubicin, taxol, ethidium bromide, mitomycin, etoposide, tenoposide, vincristine,

vinblastine, colchicin, dihydroxy anthracin dione,
actinomycin D, 1-dehydrotestosterone, and glucocorticoid.

- 5 33. A method for curing a subject suffering from a cancer,
the cancer being characterized as a group of cells having
a tumor associated antigen on the cell surface, which
method comprises administering to the subject a cancer
killing amount of a tumor targeted antibody joined to a
cytotoxic agent under conditions which permit the
10 antibody so joined to bind the tumor associated antigen
on the cell surface so as to kill the cells so bound
thereby curing the subject.
- 15 34. The method of claim 33, wherein the tumor targeted
antibody is an internalizing antibody.
- 20 35. The method of claim 33, wherein the tumor targeted
antibody is an internalizing antibody which recognizes
and binds to a Le^y determinant.
- 25 36. A method of inhibiting the proliferation of mammalian
tumor cells which comprises contacting the mammalian
tumor cells with a proliferation inhibiting amount of a
tumor targeted antibody joined to doxorubicin so as to
inhibit proliferation of the mammalian tumor cells.
- 30 37. The method of claim 36, wherein the tumor targeted
antibody is the monoclonal antibody BR96 produced by
hybridoma ATCC HB10036.
- 35 38. The method claim 36, wherein the tumor targeted antibody
is a chimeric antibody ChiBR96 produced by the hybridoma
having the identifying characteristics of HB 10460 as
deposited with the ATCC.
39. The method of claim 36, wherein the tumor targeted
antibody is the bispecific antibody with a binding

specificity for two different antigens, one of the antigens being that with which the monoclonal antibody BR96 produced by hybridoma ATCC HB10036 binds.

- 5 40. The method of claim 36, wherein the tumor targeted antibody is the monoclonal antibody, the antigen-binding region of which competitively inhibits the immunospecific binding of monoclonal antibody BR96 produced by hybridoma HB 10036 to its target antigen.
- 10 41. The method of claim 36, wherein the tumor targeted antibody is the human/murine recombinant antibody, the antigen-binding region of which competitively inhibits the immunospecific binding of monoclonal antibody BR96 produced by hybridoma HB 10036 to its target antigen
- 15 42. A method for selectively killing tumor cells expressing the antigen that immunospecifically binds to BR96 monoclonal antibody comprising reacting an
- 20 immunoconjugate comprising a molecule containing the antigen-binding region of the BR96 monoclonal antibody joined to doxorubicin with the tumor cells so as to obtain a BR96/doxorubicin-tumor cell complex thereby permitting the doxorubicin to kill the tumor cells so
- 25 complexed.
- 30 43. A method of inhibiting the proliferation of mammalian tumor cells which comprises contacting the mammalian tumor cells with a sufficient concentration of an immunoconjugate comprising a molecule containing the antigen-binding region of the BR96 monoclonal antibody joined to doxorubicin so as to obtain a BR96/doxorubicin-tumor cell complex thereby inhibiting proliferation of the mammalian tumor cells so complexed.
- 35 44. A method for treating a subject suffering from a proliferative type disease characterized by cells having

the BR96 antigen on the cell surface which comprises administering to the subject an effective amount of an immunoconjugate comprising the antigen-binding region of the BR96 monoclonal antibody joined to doxorubicin such that the immunoconjugate binds the BR96 antigen and kills said cells thereby treating the subject.

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add B1

add
C2

add
D3

add C1